

ASTERISK FOR BEGINNERS

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Tampa Bay Asterisk User Group

What is Asterisk?

- Software PBX (Private Branch Exchange)
- Compatible with several different protocols
 - Standard POTS/PSTN T1/E1/PRI/BRI
 - VOIP protocols: SIP, IAX, MGCP, H323, etc...
- Runs on Linux/BSD/Mac operating system
- Available as Open Source GPL or Closed Source Licensed version

What can Asterisk do?

- Too many features to list, here are some:
 - Voicemail
 - Conference Calling
 - ACD (Automatic Call Distribution)
 - IVR (Interactive Voice Response)
 - LCR (Least Cost Call Routing)
 - VOIP -> PSTN Gateway
 - Call Recording System

How can I start with Asterisk?

- Two simple downloadable options: (Both are single CD downloads that boot up and install a basic Asterisk system with a web interface)
 - TrixBox (formerly [Asterisk@Home](#))
 - AsteriskNow
- Add Asterisk to an existing Linux machine:
 - Go to [asterisk.org](#) and download source

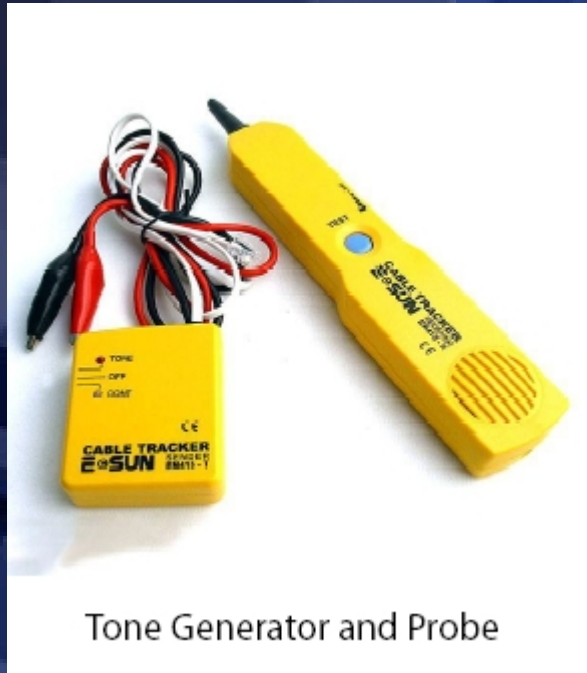
How do I connect my home phone?

- Asterisk can use a PCI card like the X100P to connect to a standard home phone line (X100P.com)
- Switch your phone number to a VOIP provider like Star2Star and use your internet connection(DSL/Cable) to receive phone calls

How can I use Asterisk at Work?

- Get a T1 or multiple-PSTN PCI card (Digium/Sangoma/Rhino) to connect existing wiring and circuits or even passthru from existing PBX

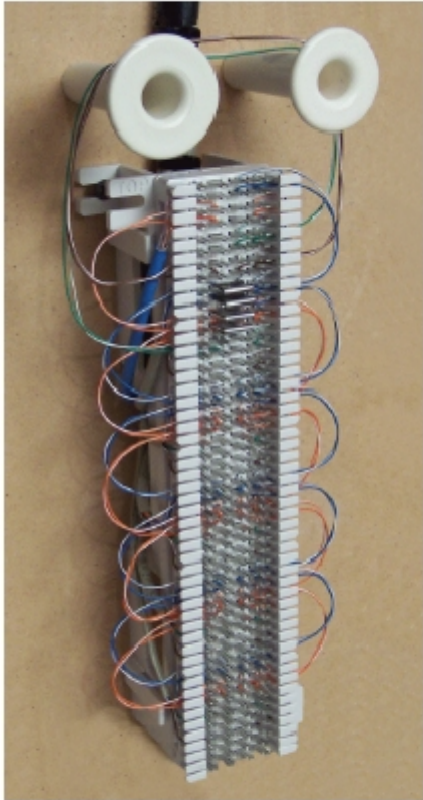
Working with Existing Wiring



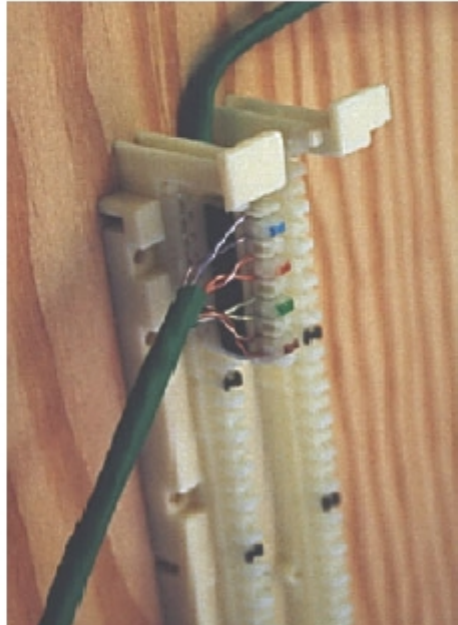
General Tools

Wire Strippers
Wire Cutters
Insulated Needle Nose
Screwdrivers
Etc.

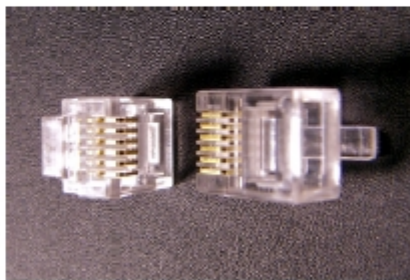
Common Interconnects



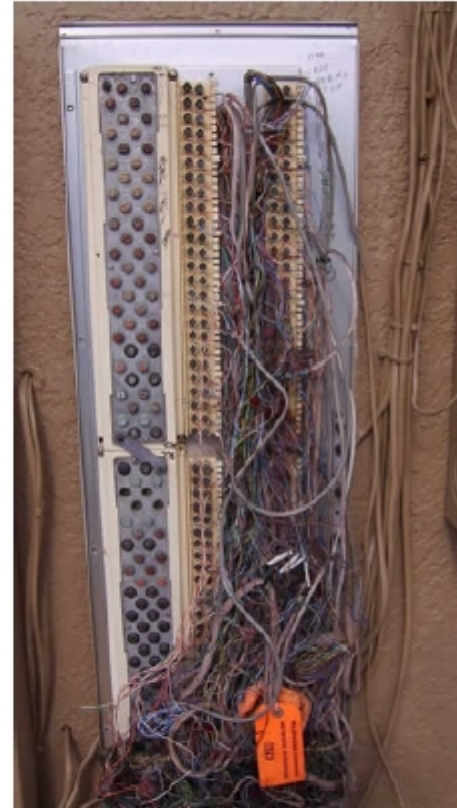
66 Block



110 Block

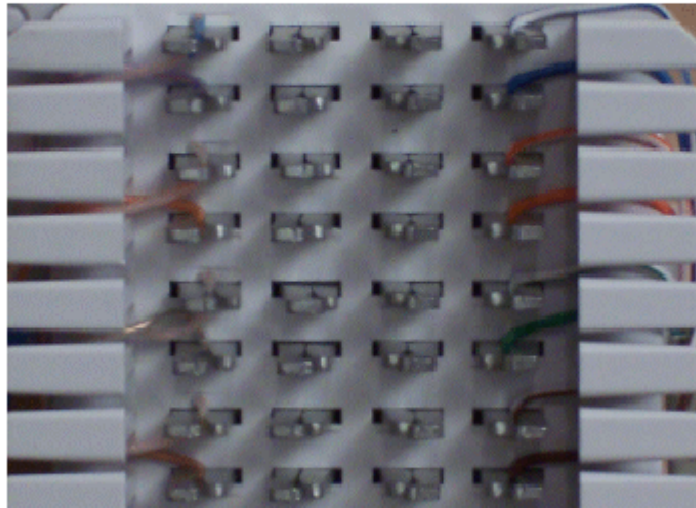


RJ Jacks



Binding Posts

66 Blocks aka M-Blocks

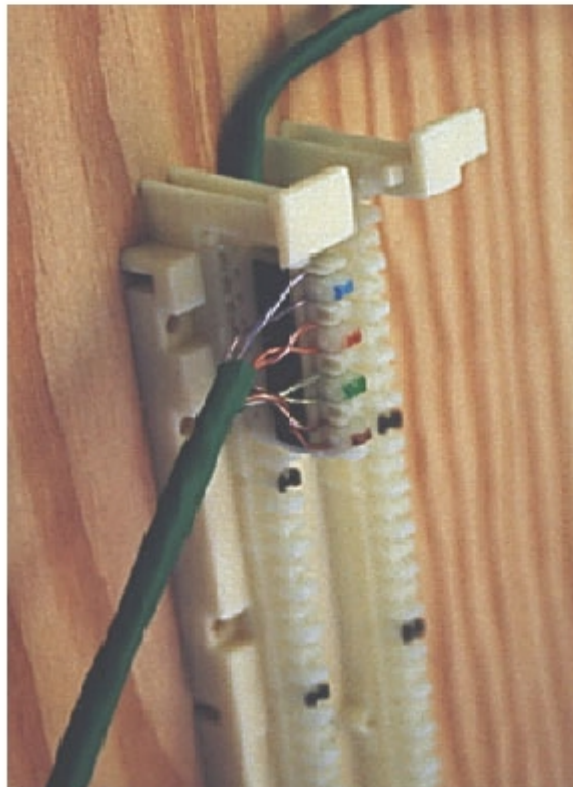


Cat-5e Punch Style
aka Butterfly Punch

Standard Punch

- IDC Style Connection; No Stripping
- The industry standard for voice
- Designed for solid copper 22-26 awg
- Typically comes in 25-pair (50-rows) capacity
- "Split" blocks have the left rows isolated from the right
- Can be ordered prewired with Amp or RJ connections
- Relatively Low-Density
- Tends to scale well with changes and additions
- Simple Cable Management
- Currently considered Legacy as 110 is replacing it
- Certified blocks can be used with Cat5

110 Blocks



IDC Style Connection; No Stripping

The industry standard for data interconnections

Designed for solid copper 22-26 awg

Configuration depends on application.

Uses extensions clips as opposed to bridging connectors

Can be ordered prewired with Amp or RJ connections

Considered a Medium-Density interconnection

Scales well with additions

Tends to be messy with changes aka "Ball of Hair"

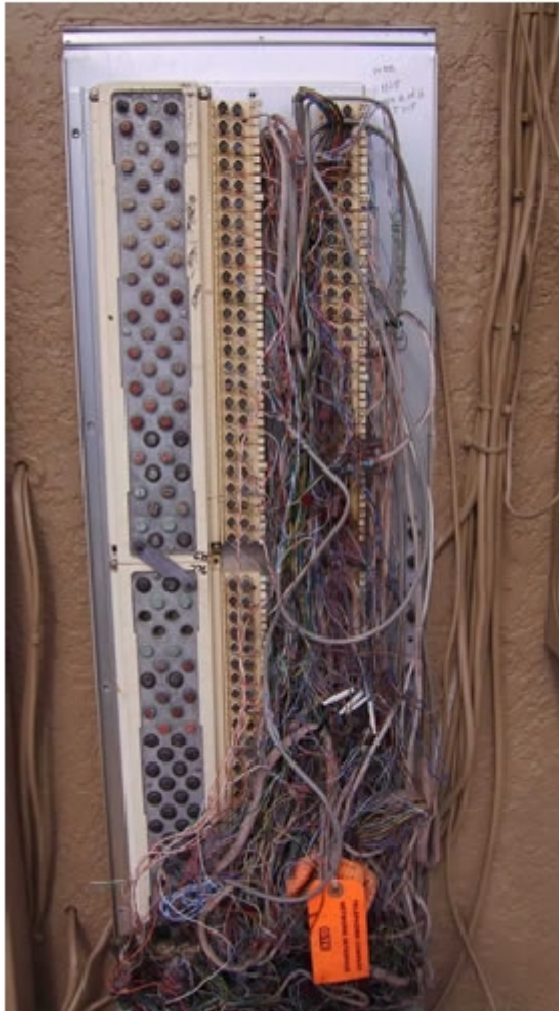
More involved cable management

Currently replacing 66 Blocks as the Voice Standard

By design all 110 blocks are certified for Cat5 or higher

110 is replacing binding-posts on wall jacks

Binding Posts



Consists of a threaded stud with washers and a nut
Can also come is a Screw with washers and a threaded seat
The insulation is stripped and half-wrapped around the stud
Replaced by 66-Blocks
Still around as a Demarc on older buildings
Used by the teleco in older cabling systems and BET's
Should be replaced with 66 blocks or better on inside wiring
Scales Poorly with Poor Cable Management

Teleco Color Codes & Cabling

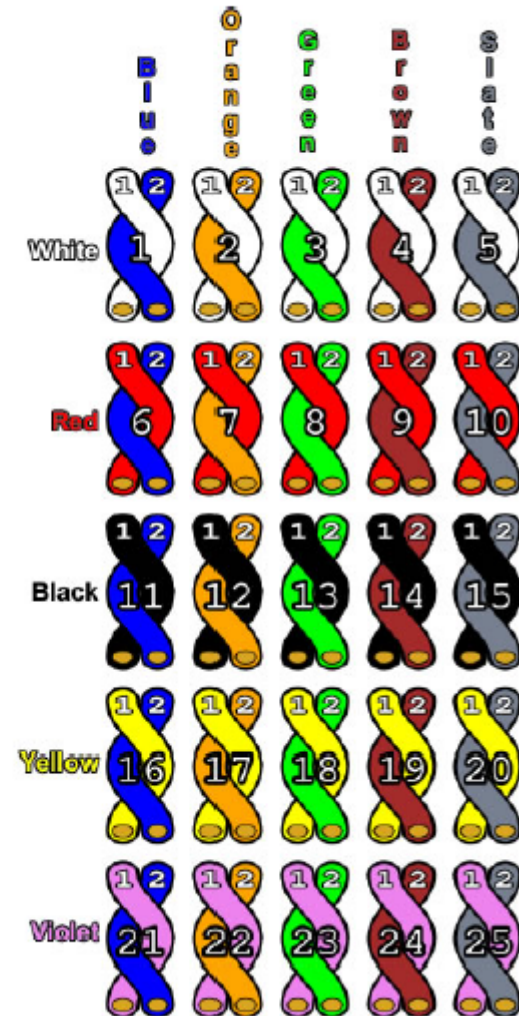
Cat3 is the standard for voice communications.

The teleco industry uses a unified 25-Pair color code consisting of 5 color columns represented by 5 color rows. After 25-pair is reached, they are considered a binder group and the color code is repeated with two plastic ribbons wrapped around the binder representing the binder group. This color code repeats once 25-binders are reached, and so on. Cables come in 25-pair multiples up to a 2700-pair cable. Custom cables can be made in whatever pair-count you specify.



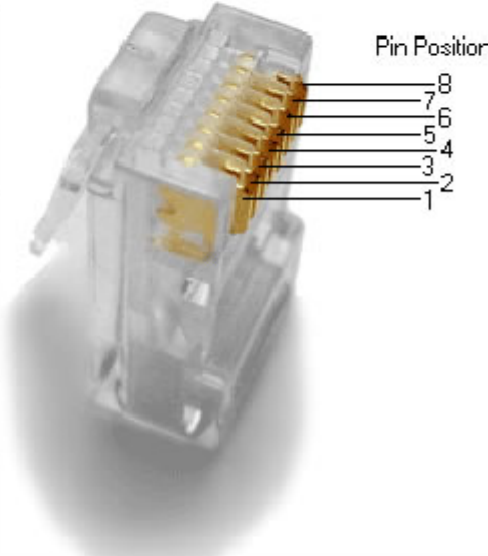














The First or Tip group of colors is:
White, Red, Black, Yellow, Violet

The Second or Ring group of colors is:
Blue, Orange, Green, Brown, Slate

Two simple mnemonic's used to remember these are:
Why Run Backwards, You'll Vomit
Bell Operators Give Better Service



T568 Standard and Cat5

Pin	T568A Pair	T568B Pair	Wire	T568A Color	T568B Color	Pins on plug face (jack is reversed)
1	3	2	tip	 white/green stripe	 white/orange stripe	
2	3	2	ring	 green solid	 orange solid	
3	2	3	tip	 white/orange stripe	 white/green stripe	
4	1	1	ring	 blue solid	 blue solid	
5	1	1	tip	 white/blue stripe	 white/blue stripe	
6	2	3	ring	 orange solid	 green solid	
7	4	4	tip	 white/brown stripe	 white/brown stripe	
8	4	4	ring	 brown solid	 brown solid	

Each pair is wrapped with a different twist rate resulting in each pair having a different length and therefore a different impedance. Mixing standards in any given cable run from endpoint to endpoint (not termination to termination) can result in matched impedances between pairs which can cause NeXT and reflections. At a minimum Category 5 or better cabling should be used. Either T568 standard may be used as a T1 extension cable.

Cable Runs

If cables are "Hung", they should be supported every 4 feet or less.
Always stay away from "Sparky" and his wires. If possible, stay 1-foot away from electric lines.

Never run cable inside electrical conduit or junction boxes.

If the wire will be traversing an air-handling area, use plenum cable.

Any wall designated as a fire-wall must have fire-stopping used around cables.

Try to run cables in an organized fashion and avoid wrapping them around ductwork/etc.

Try to use vertical wall drops when possible and nail-plates over cable through-holes.

Data cabling should be ran in a continuous piece. Avoid splicing if possible.

Use plastic grommets when running cabling through steel studs.

Plan for pair failure, and run extra pairs if possible.

Drop Ceilings are not a cable raceway!

If it looks wrong, it probably is wrong.

Use common sense!



For More Information:

- <http://www.voip-info.org>
- <http://www.asterisk.org>
- <http://www.asteriskguru.com>
- <http://oinko.net/astpligg/>
- <http://www.digium.com>